

2003 COLONIAL WATERBIRD BREEDING SUMMARY CAPE HATTERAS NATIONAL SEASHORE

Introduction

Cape Hatteras National Seashore (CAHA), well known for the rich and varied avian resource it supports, was designated an Important Bird Area by the American Bird Association. One group of interest is the ground nesting colonial waterbirds breeding along CAHA beaches. These beaches are also heavily used for recreational activities. Nesting numbers and breeding success can help indicate the health and state of the beach resources. Colonial waterbird breeding surveys have been conducted in CAHA since 1977 by CAHA staff, North Carolina Wildlife Resources Commission (NCWRC) and Dr. James Parnell of University of North Carolina.

Breeding Sites and Composition

Colonial waterbirds established eleven active colonies along CAHA in 2003. This is the same number of colonies found in 2002. Species breeding on CAHA beaches this year include Least Tern (*Sterna albifrons*), Common Tern (*Sterna hirundo*) and Gull-billed Tern (*Gelochelidon nilotica*), as well as Black Skimmers (*Rynchops niger*). All are listed as Species of Concern in North Carolina except for Gull-billed Tern having Threatened status (North Carolina Heritage Program, 2003). None of these species is federally listed. Breeding activity occurred between May and August. In many cases, birds utilized areas already closed to the public for breeding American Oystercatchers (*Haematopus palliatus*) and Piping Plover (*Charadrius melodus*). In other areas, symbolic fencing was erected once birds were observed exhibiting courtship behavior or nests were found. As in recent years, most of the colonies were comprised of small groups of Least Terns. The largest and most diverse colony was located at Ocracoke Inlet flats. Park wide nest counts were not conducted in 2003 however counts were made in some individual colonies.

Bodie Island

Least tern activity was reported on the Bodie Island flats adjacent to Oregon Inlet in 2003. These were comprised of three small but adjacent groups and are considered as part of one colony in this report. There were a combined total of approximately ten adult pairs. Six chicks were observed but were lost after rainwater flooded much of the flats. No successful nests were documented thereafter. Small groups of courting Least Terns had been observed the previous four years on the inlet flats. Nests were found only in 2000 though these were lost to overwash. Fox tracks were documented within the bird closure on Bodie Island in 2003.

Green Island, a flood tide shoal located in the southwestern portion of Oregon Inlet has recently been determined to be within the CAHA boundary. NCWRC was a great assistance to CAHA staff in transporting and erecting bird closure signs in March of 2003. A breeding inventory was conducted on June 11, 2003, by CAHA staff. A total of 205 nests were found, making it the second largest colony in CAHA in 2003. These comprised of 129 Common Tern, three Gull-billed Tern nests and 73 Black Skimmer nests. (In addition, 3 American Oystercatcher nests and one adult Wilson's plover exhibiting breeding behavior were observed.) In 2001, NCWRC had posted the site and recorded 189 colonial waterbird nests, most of which were Common Terns. This site was visited only on two occasions during the 2003-breeding season.

Hatteras Island

On the island's east-facing beaches, five water bird colonies were established as compared to six in 2002. All were comprised solely of Least Terns. One of the six colonies was in vehicle-free zone. None of the colonies were found on CAHA beaches adjacent to development though one site was located immediately north of Avon village. Site locations, from north to south, were as follows: 1.1 - 1.3 miles south of Ramp 23, 1.4 -1.7 miles south of Ramp 23, 1.4 – 1.6 miles south of Ramp 27, 0.1 miles south of Ramp 34 and 0.3 miles north of Buxton. This was the second season the site north of Buxton was used after the overwash site was created by Hurricane Dennis in 1999. This was also the most isolated site since there was no parking along the adjacent highway, a large new dune line discouraged pedestrians and the beach was vehicle-free. All other sites have been used for nesting in years past. Birds attempted to establish a colony approximately 0.5 mile south of the original Cape Hatteras lighthouse site but were unsuccessful. Areas were posted when bird activity was found. Presence of chicks and fledglings was most frequently observed at the colony situated 1.1 – 1.3 miles south of Ramp 23. Pedestrian and ORV disturbance was found in colonies located between the villages (See **Human Disturbance**) The isolated colony north of Buxton had shown some productivity in 2002 but feral cat (*Felis domesticus*) activity was found here in 2003. Domestic dog tracks were recorded in various closures in 2003.

Three colonies were established on south facing beaches of lower Hatteras Island. In addition, birds made an unsuccessful attempt to nest on the north end of the Cape Point bird closure, located at the physical cape of Hatteras. All breeding areas were within sites normally opened to off-road vehicle (ORV) traffic that had been posted at the end of March for the protection of breeding American Oystercatchers and Piping Plovers. Two sites, frequently used in the past were located along the South beach as follows: 0.1 miles southwest of Ramp 45 and 0.4 –1.2 miles southwest of Ramp 45. The third colony was located at Hatteras Inlet spit, a site that had not been used successfully in the past five seasons Least Terns utilized all three sites. In addition, Common Tern and Black Skimmers nested at Hatteras Inlet spit. In a peak season survey, 154 nests were counted at Hatteras Inlet. These colonies were comprised of 100 Least Tern, 14 Common Tern and 40 Black Skimmer nests. Gull-billed Terns had been observed earlier but no nests were found. This was the greatest number of nests and species found at Hatteras Inlet since 1998 when 570 nests were documented and breeding concentrations were shifting to Ocracoke Inlet flats. Skimmer and Common tern breeding success was low. Least tern hatching success appeared higher at Hatteras Inlet site compared to other south beach sites. Domestic dog tracks were found within an abandoned colony; Red fox (*Vulpes vulpes*) tracks were found in the dunes behind a closure southwest of Ramp 45. These closures were also located on beaches adjacent to high recreational activities.

Ocracoke Island

Two colonies were established on Ocracoke Island in 2003. The Ocracoke Inlet flats supported the largest and most productive colony in CAHA this year. This site is located at the southwest end of Ocracoke, adjacent to Ocracoke Inlet and is commonly known as South Point. All four colonial waterbird species previously mentioned nested here. A total of 405 nests were tallied this year, appreciably lower than the last count of 834 nests recorded in 2001. There were 225 Black Skimmer nests, 172 Common Tern nests and 8 Gull-billed Tern nests. Least terns were

active but nests were repeatedly washed out and none were found during surveys. Flooding, at least in part, contributed to the colony's comparatively lower numbers. Spring rains were heavy and areas of the flats were flooded at the initiation of nest site selection in late April/early May. Ground water levels appeared to remain high during the season. Flats continued to flood upon receiving moderate amounts of precipitation. Peak nesting surveys were conducted on two dates (06/0/04 and 07/01/04) due to failure of initial nesting attempts from flooding. Mink tracks were found within the Ocracoke colony.

A second colony, comprised of two small groups, was located 1.3 to 1.4 miles northeast of Ramp 70. They are considered one colony in this report. Approximately ten to twelve nests found. Nesting success was low and no fledglings were observed.

Human Disturbances

Nesting colonies along much of the east and south of Hatteras Island were again located on narrow beaches and in areas of high visitor use. Colonies on narrow beaches were closely situated to human activity. Disturbance can lead to nesting failure (Kushlan 2002). The North American Colonial Waterbird Conservation Management Plan recommends a minimum buffer of fifty yards to the nearest nest. This minimum protective buffer was not met at most sites. Four least tern chicks between Ramps 23 and 30 and seven Black Skimmer chicks at Ocracoke Inlet were found dead or dying in vehicle tracks during the 2003-breeding season. In all cases the chicks were found adjacent to but outside of posted closures. Chicks become mobile after hatching, increasing their vulnerability. In addition, two American Oystercatcher chicks were found crushed in tire tracks this season. Chick mortality from beach vehicles has also been documented in past years. Neighboring Cape Lookout National Seashore also reported the loss of oystercatcher chicks from off-road vehicles in 2003 (J.Altman, personal communication).

Incidents of visitors entering posted bird closures at CAHA were documented between mid-April and September of 2003. These closures did not only represent sites where colonial waterbirds nested but also American Oystercatcher and the threatened Piping Plover (*Charadrius melodus*). Most illegal entries were not witnessed but documented based on vehicle or pedestrian tracks left behind. Numbers are conservative since some individual records involved more than one vehicle or pedestrian. A total of 105 incidents were recorded of ORVs entering posted bird closures in 2003. This number represents a substantial increase to the 52 and 63 incidents recorded in 2001 and 2002 respectively. Of the 105 incidents reported 27 occurred on Bodie Island, 56 on Hatteras Island and 22 on Ocracoke Island. These incidents required, at minimum, repairs to twine strung between posts but often involved the replacement of broken posts and signs. In one incident 43 closure signs were run over at the Cape Point. At Hatteras Inlet bird closure, vehicle tracks came within ten feet of an oystercatcher nest. Illegal pedestrian entry in bird closures numbered 155, compared to 133 incidents recorded in 2001 and 247 in 2002. In 2003, 24 occurred on Bodie Island, 122 on Hatteras Island and 9 on Ocracoke Island. Each pedestrian entry required visitors to lift and stoop under the string that connected all posted signs. Human feces and toilet paper were again frequently observed within the closures. In addition, where closures did not supply ample undisturbed habitat, unintentional human disturbance occurred but was not well documented.

Dogs continue to be a problem in entering protected sites. From mid-May through mid-September, data was collected on the number of leashed vs. unleashed dogs observed along the CAHA beaches. Again these are conservative figures since not all beaches were observed at all times. A total of 3425 dogs were documented. Of these, 1971 were unleashed and 1454 were leashed. In an isolated incident at Hatteras Inlet, a dog jumped out of a vehicle and remained allusive for nine days until staff was able to live trap the animal. During this period colonial waterbirds, piping plover and American oystercatchers were nesting at the inlet. The dog was seen walking through the nesting colony on one occasion causing the birds to leave their nests. It is unknown if any eggs or chicks were lost during the incident. The dog fled when approached and could not be relocated at this time. Its tracks were seen several more times within the closure before being trapped nearby.

Predator Removal

Red fox populations have been expanding their range southward in CAHA. They were first reported on Bodie Island in 1996 and on Hatteras Island in 2000. Their presence has impacted all ground nesting birds at Oregon Inlet flats, Cape Hatteras Lighthouse beach, Cape Point, South beach and Hatteras Inlet spit. The new Hatteras Island fox population likely used the Bonner Bridge as a corridor to the island last year. Mel Covey, a Buxton resident, observed a red fox moving south on the bridge in 1999. This route may be continuing. Kris Fair of Pea Island Wildlife Refuge observed a dead red fox on the bridge approximately 100 yards from the northern terminus in October 2002. There are no historical records of red fox on Hatteras Island. In 2001, fox depredation was recorded on threatened loggerhead turtle eggs and hatchlings. Fox causing abandonment targeted two plover nests protected by predator exclosures. American Oystercatcher nests were also targeted by this highly efficient predator. Based on the continued and growing danger fox present to threatened species, CAHA decided to trap red fox. Trapping was concentrated on Hatteras Island where the population was lowest. Funds were procured with the help of U.S. Fish and Wildlife Service. Professional trappers from the US Department of Agriculture have removed a total of forty-three fox from CAHA in 2002 and 2003. Of these, thirty were from Bodie Island and thirteen were from Hatteras Island. Twenty-eight fox were trapped in 2002. This season, totals of 15 red fox were taken during the predator management work from June 2 -14, 2003. Of those, 14 red fox were removed from Bodie Island, which included 3 adult males, 2 adult females, 4 juvenile males, and 5 juvenile females. Another adult male was removed from Hatteras Island near Cape Point. In addition, the trappers took three opossums and one raccoon near the plover nest at Hatteras Inlet. CAHA staff live-trapped two feral cats which were transported to the Dare County Animal Shelter.

Conclusion and Recommendations

Actual productivity levels for various species of colonial waterbirds is unknown at CAHA. However observations of Least Tern colonies document low presence of chicks and fledglings. Similar observations have been made for several consecutive years. As in recent years, the largest and most successful colony was located at the Ocracoke. The posted area was large, reducing potential human disturbance except near its periphery. Large colonies often have more defenses against predators. Nesting birds on Bodie Island flats would likely benefit if a large bird closure similar to that on Ocracoke was established.

Efforts to reduce feral cat and red fox populations need to continue. Control of native predators that target any State listed threatened or endangered species should be considered. NCWRC is presently studying impacts of ghost crabs on nesting colonial water birds. The results could shed insight to factors related to egg and chick failure in CAHA.

Potential breeding grounds within CAHA must be identified and protected even before birds arrive, when possible, to reduce human disturbance leading to abandonment. Closing areas after birds appear is not the best management practice. CAHA staff definitely disturbs the congregation of birds in the process of posting closures. Each closure should supply adequate buffers or the colonies could fail due to direct or indirect human disturbance. Protecting this habitat would result in temporary closure of some areas to ORV's and other recreational activities. The impact from human disturbance needs to be better monitored. Since CAHA has management responsibilities of the large shoal at the mouth of Oregon Inlet, it needs to be posted each spring. It may be that State and Federal agencies cooperate in its protection should it continue to support nesting birds.

The reduced presence of law enforcement rangers may impact breeding success. Many visitors ignore regulations. The majority of dogs are unleashed and run freely. People frequently enter posted bird areas. These behaviors reflect the need to increase enforcement patrols. CAHA's pet leash law needs consistent enforcement.

Public education should be a priority. Visitors need to be aware of the birds' vulnerability and steps that can be taken to reduce human disturbances. This can be done through interpretive literature, programs, and roving contacts. For example, kite flying activities are increasing, especially the use of large kites. Visitors need to know they must stay far from colonies and solitary nesting birds while involved in this activity.

Hurricane Isabel's passing in September of 2003 created a great deal of suitable nesting habitat for beach nesting species. The National Park Service's Southeast Regional Office, US Fish and Wildlife Service and NCWRC visited CAHA in its aftermath. Nesting habitat was identified and recommendations were made to protect species that require such habitat from human disturbance. It is recommended that CAHA provide such protection in a timely manner to best protect all vulnerable beach nesting species.

Development along the North Carolina coast is increasing at a fast pace. Federal lands such as CAHA, CALO and PINWR become increasingly important for beach nesting colonial waterbird survival as other habitat are lost. Many species are showing serious decline in North Carolina. It is CAHA's responsibly to manage sites in such a way as to provide suitable, undisturbed habitat for breeding birds.

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Literature Cited

Altman, John. Unpublished report. 2002

Kushlan, James et al. Waterbird Conservation for the Americas: North American Waterbird Conservation Plan. 2002

Appendix A

Colony BI

Bodie Island Flats

(three subunits monitored as follows)

B1a

SW corner of original Oregon Inlet Bird Closure

35.77678°N 075.53828°W

05/31/03 Initial observation of 3 birds sitting, unknown number on nests. Fox tracks were observed leading directly up to a nest with 2 eggs.

06/02/03 4 pairs observed; 2 sitting, unknown number on nests.

06/08-25/03 3 birds sitting, unknown number on nests.

06/29/03 2 birds sitting, unknown number on nests. Vehicle tracks breached closure and came within 10 feet of nests.

07/07/03 6 birds, 4 sitting, unknown number on nests, 1 chick

07/08/03 4 birds sitting, unknown number on nests, 1 chick.

07/09/03 2 birds sitting, unknown number on nests.

07/12/03 2 chicks observed.

07/13/03 Colony active.

07/14/03 Flats flooded by rain, colony not checked.

07/15/03 No activity observed.

07/16/03 No activity observed.

07/22/03 No activity observed.

07/28/03 No activity observed.

B1b

SE corner of Oregon Inlet Bird Closure south (horseshoe) expansion

35.77818°N 075.53450°W

07/07/03 Initial observation of 2 birds sitting, unknown number on nests inside protective boundary.

07/12/03 2 chicks observed, 1 bird sitting, unknown number on nests.

07/13/03 2 chicks observed, 1 bird sitting, unknown number on nests.

07/14/03 Territory flooded by rain – no birds observed in area.

07/16/03 Colony lost to weather/flooding.

B1c

Located in protected American Oystercatcher closure

06/24/03 Initial observation of least tern making a scrape inside protected American Oystercatcher closure/territory.

06/28/03 2-3 pairs of least terns observed in closure.

07/05/03 3+ pairs observed.

07/09/03 AMOY pair + 2 chicks moved to foraging grounds. Courtship behavior of least terns observed outside

closure in ORV area north and west of closure.
 Request to expand closure for nesting terns.

07/12/03 1 bird sitting, unknown number on nests.

07/13/03 Colony active inside closure and expanding to north and west.

07/22/03 3 birds sitting, unknown number on nests. Large number of roosting birds outside closure.

07/26/03 Closure expanded to north and west to include nesting and roosting birds.

07/28/03 2 nests observed west of the closure inside east side of Oregon Inlet Bird Closure (OIBC).

08/03/03 No activity observed in closure, east side of OIBC still active. Vehicle tracks breached closure.

08/05/03 No nesting activity observed. Vehicle tracks breached closure 100ft and exited same way.

08/11/03 2 chicks observed inside E side of OIBC (35.78064N, 075.53535W)

08/12-09/02/03 Roosting terns observed in closure. No nesting activity.

09/03/03 Closure removed.

Colony BH1

1.4-1.7 miles south of Ramp 23

05/17/03 Initial observation of 3 birds sitting, unknown number on nests. Territory protected by posted boundary.

05/18/03 4 birds sitting, unknown number on nests. Tide breached closure by several feet.

05/21/03 3 birds sitting, unknown number on nests. Ocean-side boundary of closure washed out by storm tide. Closure reposted to include 1 nest with 1 egg found outside existing north boundary.

05/31/03 25 birds, 5 sitting, unknown number on nests. Least terns observed dive bombing AMOY pair with chick in dunes of north end of closure.

06/10/03 62 birds, approximately 15 sitting, unknown number on nests.

06/16/03 107 birds, 26 sitting, unknown number on nests.

06/18/03 43 birds, 30 sitting, unknown number on nests. Least tern nest with 2 eggs observed 160ft south of closure boundary. Request placed to expand closure 300ft south.

06/24/03 50 birds, 32 sitting, unknown number on nests. Least tern nest with 1 egg located 54ft south of closure (35.50838N, 075.47372W) Request placed to expand closure 300ft south to include this nest and previous request.

06/25/03 Least tern with newly hatched chick observed 60ft south of closure. 2 chicks observed oceanward of protective boundary. To date, 3 terns on nest in unprotected area. Request placed verbally to expand closure 300ft south and 30ft east to include 3 least tern nests and chicks.

06/26/03 72 birds, 33 sitting, unknown number on nests, 1 chick. 3 terns on nest outside protective boundary.

06/28/03 Colony active. "Chicks In Area - 5mph" signs (x2) posted at north and south boundary.

06/29/03 Colony active. "Chicks In Area - 5mph" signs (x2) posted along east boundary.

06/30/03 52 birds, 33 sitting, unknown number on nests, 8 chicks (1 is near fledging). 3 terns on nest outside protective boundary. Posted 2 arrow signs pointing oceanward of closure to direct traffic to tide line. 1 nest with 1 egg located 180ft south of protective boundary. Request placed to expand closure 330ft south to include this nest and previous requests. To date, 4 terns on nest outside protective boundary.

.07/02/03 40 birds: 30 sitting, unknown number on nests + 4 chicks. Closure expanded 300ft south and 30ft east.

07/07/03 60 birds: 22 sitting, unknown number on nests. Vehicle tracks enter north boundary, continue south for 150ft and exit east boundary - no nest or chick loss observed.

07/12/03 Colony active. 2 least terns on nest and 1 chick located 30-50ft south of protective boundary. Request placed to expand closure 150ft south.

07/19/03 Colony active. Closure expanded 150ft south.

07/21/03 92 birds: 26 sitting, unknown number on nests + 29 chicks, 4 fledglings.

07/22/03 Colony active. Windy, sand blowing.

07/23/03 53 birds: 23 sitting, unknown number on nests + 38 chicks, 12 fledglings. Biotech walked tire tracks oceanward of closure for dead chicks.

07/26/03 Colony active. 2 fledglings found dead in tire tracks at 38ft and 14ft respectively east of protective boundary. Request placed to expand east boundary of closure 24ft.

07/27/03 86 birds: 20 sitting, unknown number on nests + 17 chicks, 14 fledglings. Closure expanded 24ft east. 2 fledglings observed at east boundary in shade of sign post.

07/29/03 73 birds: 16 sitting, unknown number on nests + 23 chicks, 9 fledglings.

08/02/03 Colony active. Closure breached by high tide last night.

08/04/03 78 birds: 14 sitting, unknown number on nests + 13 chicks, 28 fledglings.

08/06/03 169 birds: 12 sitting, unknown number on nests + 10 chicks, 13 fledglings.

08/16/03 LE Ranger reported 2 least tern chicks stuck in deep tire ruts east of closure boundary last night - approx. 2 week old chicks needed assistance to get out of ORV area and into protective closure. Request placed for full beach closure (to ORVs) of tern colony. Tire ruts raked flat in front of closure.

08/17/03 77 birds: 1 on nest with 1 egg + 2 chicks, several fledglings. Closure expanded to surf for full beach closure, tire ruts raked flat.

08/18/03 85 birds: 1 on nest with 1 egg + 8 chicks, 13 fledglings.

08/24/03 Colony active 1 bird observed on nest.

08/26/03 Colony active. Bird not observed on nest - 1 egg in scrape.

08/30/03 0 birds in closure. 1 egg in scrape.

08/31/03 0 birds in closure. 1 egg in scrape.

09/01/03 Closure removed.

Colony BH2

1.1-1.3 miles south of Ramp 23

05/17/03 Initial observation of 2 pairs in closure, 1 nest with 2 eggs. Territory protected by posted boundary. 1 egg found crushed at boundary. Windy, high tides.

06/02/03 20 birds: 5 sitting, unknown number on nests.

06/03/03 15 birds: 5 sitting, unknown number on nests.

06/09/03 22 birds: 4 sitting, unknown number on nests.

06/14/03 7 birds: 6 sitting, unknown number on nests.

06/16/03 9 birds: 4 sitting, unknown number on nests.

06/21/03 6 birds: 3 sitting, unknown number on nests.

06/25/03 7 birds: 4 sitting, unknown number on nests.

07/05/03 0 birds observed in closure.

07/07-15/03 0 birds observed in closure.

07/16/03 0 birds observed in closure. Closure removed.

Colony BH3

1.4 - 1.6 miles south of Ramp 27

05/11/03 Territory protected by posted boundary for AMOY nest.

05/26/03 Least terns observed in closure.

06/08/03 8 birds: 2 sitting, unknown number on nests.

06/14/03 27 birds: 9 sitting, unknown number on nests.

06/21/03 24 birds: 6 sitting, unknown number on nests.

06/26/03 28 birds: 16 sitting, unknown number on nests.
"Chicks In Area - 5mph" signs (x2) posted at north and south boundary.

06/28/03 "Chicks In Area - 5mph" signs (x1) posted midway in front of closure.

06/29/03 Colony active. 1 adult least tern found dead in tire ruts 20ft in front of closure. Request expansion of closure 30ft oceanward for hatching chicks.

06/30/03 28 birds: 15 sitting, unknown number on nests. Posted arrow signs directing traffic towards surf.

07/01/03 26 birds: 18 sitting, unknown number on nests. Closure expanded 30ft east for hatching chicks.

07/05/03 36 birds: 15 sitting, unknown number on nests + 2 chicks.

07/07/03 44 birds: 8 sitting, unknown number on nests + 8 chicks. Installed several chick shelters throughout closure.

07/14/03 66 birds: 16 sitting, unknown number on nests + 7 chicks, 6 fledglings.

07/16/03 26 birds: 8 sitting, unknown number on nests + 2 chicks, 2 fledglings.

07/21/03 22 birds: 8 sitting, unknown number on nests + 1 fledgling. 1 fledgling found dead in tire ruts 26ft oceanward of closure boundary.

07/29/03 No birds in closure.

08/02/03 8 least tern roosting in closure.

08/06/03 13 least terns roosting in closure. 5 piping plover at surf in front of closure.

08/12/03 Least terns and piping plovers inside and out front of closure.

08/13/03 Least terns and piping plovers inside and out front of closure.

08/30/03 Closure removed due to no activity and beach erosion - closure causing beach to be impassible at periods of high tide.

Colony H1

South Beach by drain; 0.1 miles S of the Ramp 45

Colony within established bird use area between Ramp 45 and 49.

5/09/03 Site initiation. Many least terns utilizing area.

5/15/03 Large colony established with nests.

5/16/03 Highly active. Boundary expanded 50-60 ft. towards ocean for additional buffer.

5/18/03 Colony active.

5/22/03 Sudden decline in numbers. Only a couple of pairs observed. Most other birds have left area.

**Note: Fox tracks were found in dunal system just behind nesting area & large dog tracks found walking through nesting area.*

5/28/03 Inactive. All birds have vacated. Looks like some are moving to the south.

*Colony failure possibly due to fox and domestic dog disturbance.

**Colony H2
Hatteras Inlet Bird Closure; Northeast End**

Colony within established bird use area.

5/17/03 Very active with least, common, gull-billed terns and black skimmers.

5/19/03 Very active. Approximately 75 black skimmers present.

5/22/03 Active. Heavy rains but still lots of birds.

5/28/03 Active with least, common, gull-billed terns & black skimmers

5/31/03 Heavy with activity.

6/06/03 Colony expanding northward. Nests & scrapes outside of boundary. Signs extended for protection.

6/09/03 Colony active

6/14/03 Active but not as many birds...declining?

6/19/03 Active. Birds have spread out (should be hatching soon).

6/22/03 Active. "Peak season" nest survey completed - 100 least tern; 16 common tern; & 40 black skimmer nests. Two newly hatched least tern chicks observed still in the nest. Many, many empty scrapes found & broken eggs. Moving across ORV lane into "circle closure" (no closure #).

** "Jack" the lost dog observed running through closure, chasing up birds up and off of nests.*

6/27/03 Active. Live traps set to try to catch loose dog.

6/29/03 Live traps set.

6/30/03 Trapping efforts successful catching "Jack" the dog, a feral cat & a racoon.

7/04/03 3 chicks found in large main closure & 2 in smaller circle closure. All were very close to signs & traffic. Verbal permission granted by Mark Hardgrove to connect the two closures together - closing "ramp" to ORV traffic. Vehicles still have access to beach by using R57 ~ 0.2 miles to the N.

7/05/03 Birds heavily using newly closed area.

7/11/03 Active with least terns. Egg fragments found with both avian & mammalian predation. Black skimmers & common terns gone.

7/18/03 Active. A few black skimmers have come back. Survey from vehicle found 2 skimmer nests, ~48 least tern nests & 27 chicks.

8/06/03 Skimmers come and go. Survey from vehicle found a mixture of breeding and non-breeding birds: 136 adult black skimmers; 137 adult, 6 fledglings & 8 least tern nests; 34 adult common terns; 97 royal terns; and 6 gull-billed terns. Total: 416 birds.

Colony H3
Buxton Washout, 0.3 miles N of Buxton

Lat.	Long.
35.27628	075.51695
35.27635	075.51775
35.28104	075.51601
35.28125	075.51688

5/17/03 Birds have been at shoreline for a while, have now moved up to flats.

5/22/03 Very active. Area posted. Active oystercatcher pair also in area.

5/25/03 Active with least terns and also 2 black skimmers.

5/31/03 Active with least terns; however numbers are declining.

6/08/03 Active.

6/20/03 Lots of least terns at S end. Starting to hatch.

6/28/03 Approximately 100 birds; 30 active nests; 1 chick.
 *Cat tracks in area.

7/04/03 At least 5 chicks observed.

7/06/03 6 or 7 chicks observed.

7/17/03 Active.
 ** Cat trapped and removed.

7/17/03 28 nests and 9 chicks.

8/06/03 63 adults; 5 fledglings and 2 chicks.

8/24/03 Active but most birds gone. No nests. 3 small chicks present with about 10 adults.

Colony H4

North Avon Village, Ramp 34

Lat.	Long.
35.23383	075.55803
35.22842	075.53854
35.18943	075.74933
35.23310	075.55201

5/28/03 Area posted. Some birds and nests present.

6/06/03 Active.

6/12/03 . Colony expanding southward.

6/20/03 Colony expanding northward.

6/22/03 ~50 birds now outside of closure to the N with 52 scrapes and 2 active nests. *Closure expansion requested.

- cat tracks around closure
- 4 ORV's drove through middle of colony
- 3 pedestrian violations of colony

6/26/03 Several birds outside of closure (needs expansion). Posted "Caution birds nesting on beach" signs at N & W sides of where expanded boundary should be.

6/29/03 Large signs marking requested boundary perimeter removed and found in dunes. Re-posted signs along with arrow signs directing ORV traffic towards tide line.

6/30/03 Bird numbers are decreasing. Currently ~25 in area 5 nests and no chicks observed. *Closure expansion request resubmitted.

- 12 pedestrian violations to posted closure
- 4 ORV's drove into the requested expansion area (marked with "caution" signs and arrows) leaving very deep tire ruts. Unable to determine extent of damage to scrapes and/or nest losses.

7/01/03 Closure expansion approved. Area extended 100 ft to the N.

7/06/03 Active. Using expanded area.

7/11/03 ~45 birds and 9 nests.

7/17/03 Active. Birds incubating.

*Fresh cat tracks at base of dune line behind colony. Traps set but nothing caught.

7/24/03 63 adults, 3 fledglings, 1 chick & 8 nests. ~25 birds outside of closure to the N with 3 new nest scrapes, atleast 2 nests & 1 chick. *Closure expansion requested for additional 300 ft to the N. "Caution birds nesting on beach" and arrow signs erected at proposed boundary edge to direct ORV traffic towards tide line. "Chicks in area, 5 MPH" signs also erected to slow traffic in area due to narrow width of beach.

7/26/03 Active. 8 pedestrian and 1 dog violation of closure.

7/27/03 Active. 119 birds using area with atleast 3 chicks. Shade shelters installed.

8/02/03 Dog off leash running along perimeter of closure, scaring up birds.

8/06/03 Active. 139 adults (98 of which are outside of closure), 7 fledglings, 3 chicks, 5 nests of least terns; 5 adult common terns also in area.

8/14/03 Active but dispersing.

8/24/03 Most birds gone. Only a few adults left with 4 small chicks.

Colony H5

South Beach, 0.4 - 1.2 mi. S of the Ramp 45

- Colony nested within established bird use area.
- 6/05/03 Colony re-establishing (colony H1).
- 6/09/03 Active but moving southwards towards AMOY nest at 1.1 mi. S of drain.
- 6/14/03 Birds thinly stretched out - concentrating around AMOY nest and moving further S outside of closure.
- 6/20/03 Birds outside of boundary. Closure expansion request placed.
- 6/22/03 ORV tracks found through area birds were gathering to S of closure. Birds have left. Expansion request removed.
- 7/04/03 Very few birds widely stretched out. Need to count nests but probably only 3 or 4.
- 7/07/03 3 least tern nests located between 0.8 -1 mi. S of the drain.
- 7/17/03 Birds gone. Reason for dispersal unknown.

Colony 01

- 5/1/03 South Point bird closure flooded from frequent heavy spring rainfall
- 5/16/03 Black skimmers, Least tern, Gull-billed tern and Common terns have scrapes.
- 5/16/03 Closure expanded on one side for a group of approximately 10 skimmers that have made scrapes outside of the closure
- 5/20/03 Eggs observed in nests. Mink tracks seen on the soundside of South Point closure.
- 5/27/03 Rained for a week, water has gathered at flats, most of the black skimmers have moved off their scrapes due to flooding
- 5/30/03 Some Common tern nests in flats have washed out. Least terns have left South Point
- 6/14/03 Skimmer egg reported by visitor to be 100 feet outside of closure with no birds near it. LE officer responding to the call but found nothing.
- 6/15/03 South Point closure flooded due to rainwater. Many of the lower nests are washed out.
- 6/17/03 Closure expansion requested for South Point closure
- 6/18/03 stormy night, 8 signs down at South Point closure. Rainwater has collected again and over washed many of the lower nesting areas.
- 6/12/03 nest count in NW section of colony: 5 gull-billed, 57 common terns, 5 black skimmers, nest washed out of SE

section and birds are presently reestablishing territories

7/3/03 South Point closure modification approved and installed
7/5/03 tern and skimmer chicks observed, chick shade shelters put out
7/11/03 nests count for the other section of South Point closure: 3 gull-billed, 115 common terns, 220 black skimmers. Totals for the two sections: gull-billed 8, 172 common terns, 225 black skimmers
8/2//04 Chicks and fledglings observed
8/9/04 Chicks and fledglings observed vehicle drove through closure this week running over nests with eggs and nest scrapes.
8/18/03 South Point closure flooded due to heavy rains. Terns have completed nesting and rearing young, many have left site. Approximately 20 skimmers continue incubating nests. Flooding pushed skimmer adults and chicks out into ORV traffic. 6 skimmer chicks were found in dead in tire tracks, 2 others were injured and taken to rehab. facility in Ocracoke village where 1 was euthanized. (wing broken in 3 sites and broken mandible); closure expanded approximately 300 feet towards ocean shoreline, A traffic lane was left that was approximate width of 3 cars in most areas
8/19/03 Skimmer chick in rehab. Received minor injury and was released back into the colony
8/22/03 Skimmers out of posted area again, closure expanded to ocean shoreline
8/29/03 there still are 15 flightless skimmers in closure, no active nests observed.
9/5/03 the section of the closure not occupied by the skimmers was removed
9/15/03 heavy overwash through closure from approaching Hurricane Isabel begins and continues through the week.

Colony 02

1.3 -1.4 miles NE of Ramp 70 (monitored in two subunits as follows)

02a

1.3 miles NE of Ramp 70

6/7/03 5 least tern nests found
6/8/03 4 additional least tern nests (total of 9) found, closure established, small mammal tracks, possible cat, in area.
8/14/03 Tern closure removed, chicks no longer observed, no fledglings observed

O2b

1.3 miles NE of Ramp 70

6/20/03 Small group of least terns, 2 nests found,
approximately 10-15 pairs in colony, request for
closure submitted.

6/30/03 least tern closure requests was cancelled, nest gone
and birds have left area, closure approval received.

7/3/03 birds re-establishing site. Requested closure
again on

7/3/03, approved 7/11/03, installed 7/12/03.

9/2/03 No activity, closure removed.